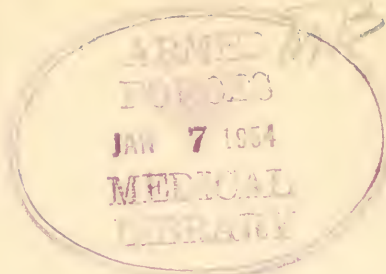


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Letter No. 5

March 1, 1943

Dear Doctor:

This letter is sent to you by the Surgeon Generals of the Army and Navy and the U. S. Public Health Service, with the cooperation of the American Medical Association and under the auspices of the Committee on Information of the Division of Medical Sciences of the National Research Council.

The Journal of the American Medical Association for February 27 contains some of the important papers from a symposium on education and war which was a part of the Annual Congress on Medical Education and Licensure held in Chicago February 15 and 16.

President Edward C. Elliott of Purdue University spoke on the work of the War Manpower Commission, in which he is chief of Professional and Technical Training, describing the organization of the War Manpower Commission as it affects physicians. He called attention particularly to the fact that: "All able bodied male students are destined for the armed forces. The responsibility for determining the specific training for such students is a function of the Army and Navy."

Brigadier General Joe N. Dalton, Assistant Chief of Staff for Personnel, Services of Supply, outlined the plans of the Army for the training of premedical and medical students. Soldiers assigned to the Army specialized training program will be on active duty as members of a unit located at a college or university. They will be in uniform and will receive the pay and allowances of enlisted men. Housing, feeding, instruction and other services will be provided by contract between the institution and the Army. The selection of the institutions which will provide the training will be made by a joint board consisting of three representatives of the Army, three of the Navy and three of the War Manpower Commission. The premedical program will include five terms or sixty-four weeks of elapsed time, as compared with the three-term basic technical program for other phases of education. The premedical students will be housed in the same manner as other soldiers in the basic training program, will be subject to the same discipline and will undergo the same amount of military training and physical conditioning. The medical curriculums are unchanged. Each school will establish its own curriculums. Medical men assigned to this program will be selected as medical students have been selected previously, that is, from the premedical group. School authorities will do the selection job under the general supervision of the Army. Military training will be reduced to one hour a week for the medical students, and physical conditioning will be left largely to the men to work out for themselves. When it is impossible to house the men as are others assigned to the Army

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specialized training program, commutation allowances will be granted and the men will make their own arrangements for board and room. On graduation the medical men will be commissioned as first lieutenants and then placed on inactive status so that they may complete a year of internship or residency. Throughout the program there will be constant screening of men.

Dr. Harold S. Diehl described the work of the Procurement and Assignment Service, emphasizing particularly the manner in which that service is selecting interns and residents for the period 1943. The number of residents, in general, is to be 50 per cent of the number which the hospital may have had before the war.

Colonel George F. Lull described particularly the work of the physician in the Army. In January 1943 there were approximately 35,594 medical officers on duty--a little more than 3,000 under the total requirements. Dental and veterinary requirements had been met. The Sanitary Corps and the Medical Administrative Corps were somewhat below strength. At present, about 900 Medical Administrative Corps officers are being commissioned from officer candidate schools each month. Colonel Lull said: "Young medical officers entering the service object to being assigned to tactical units and think that anything they learn that is not purely medical is a sheer waste of time. The medical officer with a tactical unit is first, last and always a physician. He has to learn a little about a lot of strange subjects. He is, first of all, the family physician to his unit. He must be expert in first aid, have a well rounded knowledge of sanitation and preventive medicine and know emergency surgery. In order to keep as many men on the firing line as possible, he must exercise excellent judgment in the selection of patients for hospitalization. He must recognize infectious diseases early in order to prevent their spread. He is the most important link in the chain along which the wounded soldier travels." Colonel Lull emphasized that not all medical specialists are being employed in their specialties but that a conscientious effort has been made to place men where the government will get the greatest good out of their services. Women physicians are being hired as contract surgeons and sent to the WAAC training center at Fort Des Moines, Iowa. After a period of training they are given commissions in the WAAC. Apparently few women desire this type of work, as less than one dozen qualified physicians have applied. Concerning residents in hospitals Colonel Lull said: "They will be chosen primarily from the following groups: (1) women physicians, (2) men physicians who are physically disqualified for military or naval service, (3) men physicians who do not hold commissions but are in class 3A, (4) alien physicians and (5) in limited numbers physicians who hold commissions but who may be deferred for an additional year before entering the service. The first four groups should be sufficient to furnish most of the needs." Colonel Fitts of the Surgeon General's Office has been assigned to Colonel Herman Beukema's office to handle problems of premedical and medical education.

Recent research by Dr. Sarah E. Stewart of the Biologics Control Division, National Institute of Health, indicates that the antitoxin response to tetanus toxoid is greater when the toxoid is given in combination with *Cl. perfringens* toxoid than when it is given alone. The complete discussion will appear in a forthcoming issue of War Medicine.

From the Division of Zoology of the National Institute of Public Health comes a report by Dr. Frederick J. Brady, Dr. Myrna F. Jones and Walter L. Newton on "Effect of Chlorination of Water on Viability of Cysts of *Endamoeba Histolytica*." The results indicate that cysts cannot be killed by chlorine in any practical dose except by exposures of at least twenty minutes. The recommended dose of calcium hypochlorite now used, that is, about 3.77 mg. per liter, cannot be relied on to kill the cysts of *E. histolytica* in types of raw water. Doses of approximately 7.54 mg. per liter and more result in killing the majority of the cysts. (Article in forthcoming issue of War Medicine)

The personnel of Naval Laboratory Research Unit No. 1 at Berkeley, California, has prepared for War Medicine a review on air-borne infections. In general, they find that a vapor can be produced by dropping propylene glycol from a gravity feed mechanism onto any sort of a hot plate or heating element and that if there is sufficient motion of the air to distribute the vapor throughout the room, no other apparatus is necessary. They conclude that it seems reasonable to anticipate the day when this material will be widely used in air raid shelters, barracks, mess halls, canteens and theaters. (Article in forthcoming issue of War Medicine)

Drs. J. B. Kirsner, W. L. Palmer and Eleanor Humphreys have made a survey of changes in the human kidney following the administration of alkali. This they report in the Archives of Pathology, Feb. 1943, page 207. Some of the patients had had alkalosis during alkali therapy, some had alkalosis at the time of death, and four had never had alkalosis although they had taken large amounts of alkali during life. Histologic changes were not found in the glomeruli of the kidneys. The epithelium of the collecting tubes showed degenerative and regenerative changes. There was precipitation of calcium in the lumens of these tubules.

For many years sodium thiosulfate has been accepted as the drug of choice in the treatment of arsenical dermatitis. Now E. W. Abramowitz and his associates report in the Archives of Dermatology and Syphilology, Feb. 1943, page 175, that sodium thiosulfate does not increase the urinary secretion or alleviate dermatitis due to the arsphenamines.

A discussion on painful feet appears in the Proceedings of the Royal Society of Medicine, Dec. 1942, page 47. Several British orthopedic surgeons discussed the subject as it affects the British Army. Mr. C. Lambrinudi said that the foot problem on the whole is muscular fatigue, leading to ligamentous strain, and that fatigue produced most of the deformities--not the shoes. The asthenic atonic individual whose muscular tone is so poor that he cannot hold his feet in the correct position for any length of time ought never to be in the army. The belief in wedges as a curative agent for valgus foot is based on the assumption that the ligamentous strain is due to fatigue of the muscle, which is too weak to take the load, and that by reducing the load by means of wedges or supports, fatigue will be prevented and the muscle thereby strengthened. Mr. Lambrinudi says that the reverse is the case. He condemns the indiscriminate use of inside wedges for such cases. In discussing hallux valgus, he says there are three reasons why a man's shoes which have previously been comfortable suddenly become tight: 1) the shoe may have shrunk; 2) the foot may have grown larger; or 3) the foot may have altered its shape. In the majority of cases the last is responsible. Pain in the big toe, with or without preexisting hallux valgus, is a sign that the whole foot is fatigued and wants rest. Dr. E. J. Crisp analyzed the normal foot, the extra broad and narrow foot and the conditions that prevail in army service. Mr. H. L-C. Wood reported that more than half of the total of Service out-patient attendances at an Emergency Medical Service Hospital were for disabilities of the foot. Fifty-seven per cent of pain feet were associated with deformity of the anterior or longitudinal arches or with callosities. The majority of patients had suffered minor foot disability prior to army life. Long hours of marching or arduous training, rather than drill, was the precipitating cause of foot breakdown. Remedial treatment had been, in general, disappointing. Brigadier W. Rowley Bristow felt that a large number of men taken into the service would never make infantry soldiers but could well be employed as drivers or personnel in tank units. He stated that an effort is being made in the British army to sort these men out at an early stage and to fit them into that branch of the service in which they are likely to make good. He felt that inadequate use was being made of orthopedic surgeons and that medical officers, in general, should get patients with painful feet to the orthopedic surgeons if possible. Many soldiers complaining of painful feet were put on treatment, which meant physical treatment, and exercises, when what most of them needed was rest. He said: "Every man complaining of foot disability does not need hospitalization, but the M. O. should apply to the orthopedic surgeon for advice in doubtful cases."

The physiologic adjustments which the human being has made to the standing posture are considered in a review by Dr. William R. Amberson, published in the Bulletin of the School of Medicine, University of Maryland, Jan. 1943, page 127. The change from a recumbent position to an erect position leads to an immediate fall in the systolic blood pressure, with little change in the

diastolic value. This fall is mainly caused by the downward drainage of venous blood, particularly into the legs and liver, with a consequent reduction in the venous return to the heart. On the arterial side a swiftly moving reflex action induces an orthostatic vasoconstriction in the subcardiac regions which compensates or even overcompensates for the increased hydrostatic pressure, so that the blood flow is slowed. The vasoconstriction, while circumventing a downward surge of arterial blood, cannot prevent some rise in capillary pressure. The filtration of fluid is therefore increased, reabsorption diminished, and plasma volume falls. Kidney function is greatly influenced by posture. The glomerular filtration rate and renal blood flow are considerably reduced during quiet standing. The urine flow is even more drastically reduced. Orthostatic oliguria is observed even when a water diuresis is in progress. The flow may fall to as little as one-tenth of the previous recumbent value and is not fully restored for some time, forty-five to ninety minutes, in a second reclining period. The magnitude and time relations of this effect suggest that although it must depend in part upon reduced glomerular filtration, it requires some additional factor to develop its full intensity. It is suggested that some humoral mechanism stimulated by the erect posture is concerned. Since a marked orthostatic oliguria has been observed in a case of diabetes insipidus the hormone involved is presumably not pituitrin. A possibility exists that the renin-angiotensin-angiotonin mechanism, excited by the vasoconstriction and renal ischemia of the upright posture, may intervene to maintain the vasoconstriction.

Drs. Robert Ward, Albert B. Sabin, Victor A. Najjar and L. Emmett Holt Jr. cooperated in a study in several Baltimore hospitals and in Cincinnati on the effects of thiamine deficiency on infection with poliomyelitis. It was found that the status of thiamine nutrition need not be a factor in determining whether or not infection by poliomyelitis virus shall result in the paralytic or in one of the nonparalytic forms of the disease. Neither did there seem to be any evidence that nicotinic acid deficiency was a prerequisite for the development of the paralytic form of the disease. (Proceedings of the Society for Experimental Biology and Medicine, Jan. 1943, p. 5)

Investigators at the University of Chicago, Department of Surgery, headed by Dr. A. Brunschwig, studied the effects of gelatin given intravenously for nutritional purposes. They found that a positive nitrogen balance or nitrogen equilibrium may be maintained in protein-depleted dogs with a gelatin solution injected intravenously as practically the sole source of nitrogen. Elevation of depressed blood plasma protein levels may be secured from intravenously administered gelatin as practically the sole source of nitrogen. At least a portion of the intravenously injected gelatin appears to be metabolized since there is a substantial increase in nonprotein nitrogen excretion following injections. (Proc. Soc. for Exp. Biol. and Med., Jan. 1943, p. 46)

Investigators in Philadelphia and at the University of Minnesota, including Drs. John H. Arnett, Wesley W. Spink, Ruth Boynton and Suzanne Agnew, have found that the chewing of a mixture of 0.325 grams of sulfadiazine in 1.5 grams of paraffin brings about a high concentration of free sulfadiazine in the saliva. Such a procedure, they say, may favorably affect the course of acute hemolytic streptococcic infections such as pharyngitis and tonsillitis without recourse to large systemic doses. (Proc. Soc. for Exp. Biol. and Med., Jan. 1943, p. 54)

The effects of cooking on vitamin content continue to be studied in various nutrition laboratories. From the Elvehjem group at the University of Wisconsin comes a study of the retention of vitamins in cooked meat. The average retention in the meat alone is 70 per cent for thiamine after roasting and broiling, and 50 per cent after braising; 85 per cent for nicotinic acid after roasting and broiling, and 65 per cent after braising; and 85% of riboflavin as a result of any of the cooking methods. The total retention in the meat plus the drippings is about the same for all the methods, an average of 70 per cent for thiamine and at least 90 per cent for riboflavin and nicotinic acid. Appreciable amounts of each of the vitamins are found in the drippings, particularly from braised loin cuts. A wide variation occurs in the thiamine and riboflavin contents of different pork carcasses, nicotinic acid being more constant. (The Journal of Nutrition, Feb. 10, 1943, p. 143)

In the American Journal of Orthodontics and Oral Surgery for February 1943 appear seven papers on the care of military and civilian injuries in oral surgery, covering fractures of the facial bones, the use of remote flaps in repairing defects of the face and mouth, internal wire fixation for fractures of the jaw, aviation dentistry and three other papers on fractures of the jaw. The articles are profusely illustrated.

Investigators at the U. S. Naval Hospital in Oakland, Calif., have made a report on subdural hematoma and effusion as a result of blast injuries. Lt. Comdr. Walter D. Abbott and Lts. (j.g.) Floyd O. Due and William A. Nosik report on ten patients with subdural hematoma and effusion due to blast and emphasize that it is imperative that every possible facet in our diagnostic armamentarium be exhausted to rule out the presence of these conditions in patients who have been exposed to blast. Careful psychiatric examination with the use of specialized psychologic testing was more successful in their experience as an indication for pneumoencephalography than the usual neurologic criteria. Objectively patients demonstrate signs of sympathetic overstimulation with hyperventilation, tachycardia, vasomotor flushing,

dilated pupils and cold, moist and discolored extremities. In the most frequent syndrome there is rather pronounced retardation in intellectual activity and personality interrelationships. The facies is one of dullness with but little play of facial expression. The attention during the interview is impaired, and the response times are slow. Answers to questions are remarkably barren in description and detail. Patients with subdural lesions are noted for complete lack of push and initiative. The less frequent syndrome occurs in cases of longer duration, the most striking feature being the impairment of inhibition or restraint producing a euphoric and sometimes facetious air. Motor restlessness with exaggerated mannerisms and gesticulations may be prominent. The emotional tone has the raw "feel" of the organic type with lability and explosiveness. Vasomotor flushing of the face and increased neuromuscular tension can be seen as somatic evidence of quickly stimulated rage reactions. The voice is too loud for the size of the room or for the distance between the examiner and the patient, and laughter is stimulated frequently by the patient's own remarks. The patient may assume unusual liberties in the interview situation, demonstrating poor judgment in interpersonal relationships. Undue productivity, unusual expressions of hostility, self aggrandizement and frequent reminiscences may be part of the lack of restraint. Early differentiation of subdural hematoma or effusion from psychoneuroses, traumatic neuroses and "postconcussional" states is important individually, socially and economically. A careful psychiatric examination can demonstrate intellectual impairment in cases of subdural hematoma or effusion despite negative neurologic examination. Intellectual impairment in blast cases with or without positive neurologic findings is an indication for a pneumoencephalogram. The Shipley-Hartford Retreat test is an effective instrument in the diagnosis of subdural hematoma or effusion. (J A M. A. March 6, 1943)
